

USING HIGH-THROUGHPUT SEQUENCING TO INVESTIGATE DIETARY PREFERENCES OF BATS IN THE WAKE OF WHITE-NOSE SYNDROME

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Introduction

- White-nose Syndrome (WNS) has destabilized bat community structure and relaxed niche partitioning (Jachowski et al. 2014)
- *Perimyotis subflavus* and *Myotis* species are severely impacted by WNS
- *Corynorhinus rafinesquii* shares a foraging niche with WNS-affected bats (e.g., *P. subflavus* and *Myotis* species)
- Potential changes in bat diets post-WNS have not been investigated



Study Site

- Mammoth Cave National Park, KY; WNS first detected in January 2013
- *P. subflavus* and *Myotis* species were sampled at Colossal Cave (2011-15)
- A colony of *C. rafinesquii* was sampled in a barn loft (2011-15)



Sampling Methods

- *P. subflavus* and *Myotis* species were captured using a harp trap placed at the cave entrance
 - Fecal pellets from individual bats were preserved in 95% ethanol (at -80° C)
- A plastic tarpaulin was placed in a barn loft beneath a colony of *C. rafinesquii* (Dodd et al. 2015)
 - Fecal pellets collected from the maternity colony were preserved in 95% ethanol (at -80° C)



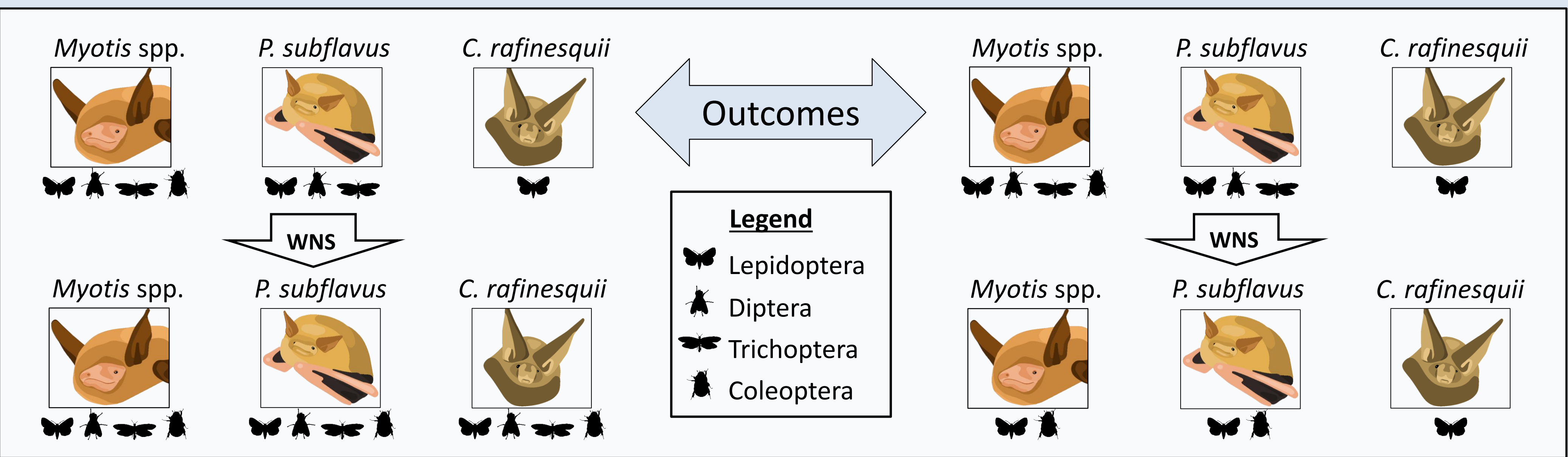
Molecular Analysis Methods

- Prey DNA in fecal pellets will be extracted, amplified (Zeale et al. 2011), and sequenced via Illumina MiSeq
- Sequences will be quality filtered and clustered into molecular operational taxonomic units (MOTUs)
- MOTUS will be identified to species by comparison to reference arthropod sequences in Barcode of Life Data Systems



Expected Results

- Due to relaxed niche partitioning post-WNS, bats may adopt non-traditional foraging niches and thus be exposed to a new composition of available prey
- The dramatic mortality associated with WNS may lead to reduced competition for prey resources among sympatric bat species



Diets may expand to include additional insect orders or narrow to rely more on preferred insect orders

Literature Cited

- Dodd et al. 2015. Prey size and dietary niche of Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*). Southeastern Naturalist 14: 685-696
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